

# Report of Waste Discharge Santa Ana Region

*Prepared for*

**Permittees of Riverside County, Santa Ana Region**

Riverside County Flood Control and Water Conservation District

County of Riverside

Beaumont

Calimesa

Canyon Lake

Corona

Hemet

Lake Elsinore

Moreno Valley

Norco

Perris

Riverside

San Jacinto

August 30, 2000

**URS**

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On March 8, 1996 the Santa Ana Regional Water Quality Control Board (Santa Ana Regional Board) adopted Order No. 96-30, an area-wide municipal separate storm sewer system (MS4) National Pollutant Discharge Elimination System (NPDES) permit (1996 Permit). This Report of Waste Discharge (ROWD) is an application for renewal of 1996 Permit (NPDES No. CAS618033) for the Riverside County Flood Control and Water Conservation District (RCFC&WCD), the County of Riverside (County), and the incorporated cities of Riverside County within the Santa Ana River basin. Each of the Permittees affirmed their intent to participate in this application for renewal of the area-wide MS4 permit. Those letters of intent were provided to the Executive Officer of the Santa Ana Regional Board in January 2000.

The 1996 Permit expires on March 1, 2001 and requires that this ROWD be submitted no later than September 2, 2000 (180 days in advance of the expiration date). The 1996 Permit also specifies that the ROWD "shall, at a minimum, include the following:

- a. Any revisions to the Drainage Area Management Plan including, but not limited to, all the activities the Permittees propose to undertake during the next permit term, goals and objectives of such activities, an evaluation of the need for additional source control and/or structural BMPs, any proposed pilot studies, etc.;
- b. Changes in land use and/or population including map updates; and
- c. Any significant changes to the storm drain systems, outfalls, detention or retention basins or dams, and other controls, including map updates of the storm drain systems."

In May 1990 RCFC&WCD, the County, and the Cities of Beaumont, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, and San Jacinto submitted an application for an area-wide municipal stormwater NPDES permit for the portion of the county within the Santa Ana River basin. On July 10, 1990, the newly incorporated cities of Calimesa and Canyon Lake were added to the application. An "Early" Permit<sup>1</sup> was adopted by the Santa Ana Regional Board on July 13, 1990. The "Early" Permit designated RCFC&WCD as the Principal Permittee. The County and the 11 cities were designated as Co-Permittees. Collectively, the Principal Permittee and the Co-Permittees are referred to as the Permittees.

In compliance with the "Early" Permit, the Permittees submitted an application for renewal of their area-wide municipal stormwater NPDES permit January 1995, 180 days prior to the expiration date of July 1, 1995. Due predominantly to statewide negotiations over proposed provisions regarding receiving water limitations, the 1996 Permit (Order No. 96-30) was not

<sup>1</sup> Some municipalities applied for and received stormwater discharge permits prior to the United States Environmental Protection Agency's promulgation of the "Final Rule for NPDES Permit Application for Storm Water Discharges" on November 16, 1990. Such permits have been referred to as "Early" permits.

adopted by the Santa Ana Regional Board until March 8, 1996. As in the "Early" Permit, the 1996 Permit designated RCFC&WCD as the Principal Permittee, and the County and the 11 cities as Co-Permittees.

The 1996 Permit recognizes that there are areas of Riverside County within the Santa Ana Regional Board area that are not subject to current federal stormwater regulation, are not under the jurisdiction of the State of California, or are not under the jurisdiction of the Permittees. Such areas or entities include:

- federal and state lands, including, but not limited to, military bases, national forests, hospitals, colleges and universities, and highways;
- utilities and special districts;
- Native American tribal lands;
- non-urbanized areas; and
- agricultural lands.

These areas are excluded from coverage under the 1996 Permit and should continue as such. However, the Permittees anticipate that other stormwater dischargers within the Santa Ana River basin (including some of the areas or entities just listed) may be permitted separately under Phase II of the federal stormwater regulations. Other stormwater dischargers may be issued Waste Discharge Requirements (WDRs) by the Santa Ana Regional Board through their authority under the Porter-Cologne Act, through the Total Maximum Daily Load (TMDL) program, or through other regulatory programs.

The Santa Ana Region Drainage Area Management Plan (SAR DAMP) was developed in early 1993 and was based upon the "Early" Permit. During the term of the next 5-year permit (2001 Permit), the Permittees will be revising the SAR DAMP to include program components developed during the term of the 1996 Permit and to address requirements of the 2001 Permit. The monitoring program will also be revised and will be incorporated into the SAR DAMP. Revision of the SAR DAMP and the Monitoring Program will also reflect other surface water quality programs that have been recently initiated.

## **2.1 SURFACE WATER BODIES**

Approximately one-quarter of Riverside County drains into surface water bodies within the jurisdiction of the Santa Ana Regional Board. Those surface water bodies (or portions thereof) are:

### **Rivers and Streams**

Santa Ana River, Reaches 3 and 4

Tributaries to the south bank of the Santa Ana River

Temescal Creek, Reaches 1, 2, 3, 4, 5, and 6

Tributaries to Temescal Creek

Coldwater Canyon Creek and its tributary drainages

Bedford Canyon Creek and its tributary drainages

Tequesquite Arroyo (Sycamore Creek) and its tributary drainages

Tributaries to the north bank of the Santa Ana River

Day Creek

San Sevaine Creek

San Jacinto River Basin

San Jacinto River, Reaches 1, 2, 3, 4, 5, 6, and 7

San Jacinto River, North Fork

Bautista Creek, headwaters to debris dam

Fuller Mill Creek

Salt Creek

Strawberry Creek

Stone Creek

Other tributaries: Indian, Hurkey, Poppet, and Potrero

San Timoteo Creek Basin

San Timoteo Creek, Reaches 3 and 4 and tributaries

Little San Gorgonio Creek and its tributaries

### **Lakes and Reservoirs**

- |                 |                |                         |
|-----------------|----------------|-------------------------|
| • Canyon Lake   | • Lake Fulmor  | • Lake Perris           |
| • Lake Elsinore | • Lake Hemet   | • Lee Lake              |
| • Lake Evans    | • Lake Mathews | • Mockingbird Reservoir |



The beneficial uses of these surface water bodies include: municipal and domestic water supply, agricultural water supply, industrial service water supply, industrial process water supply, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and preservation of rare and endangered species. Several of these surface water bodies have been identified by the State of California as "impaired" because they do not meet water quality standards for the designated beneficial uses<sup>2</sup>.

## **2.2 LAND USE**

Within the portion of Riverside County under the jurisdiction of the Santa Ana Regional Board, the population has grown from approximately 930,000 in late 1994 to approximately 1,013,000 in 2000. The areas of the most significant growth in population include the Cities of Corona, Hemet, Riverside and portions of unincorporated Riverside County (e.g., Eastvale area). The long range population growth forecast indicates that the population of the permitted area will increase to approximately 1,182,000 by 2005<sup>3</sup>.

Land uses within the region include open space, residential, commercial, light industrial, heavy industrial, and agriculture. The agricultural land uses include citrus and fruit orchards; row crops such as sugar beets and potatoes; alfalfa and silage, irrigated and dry pasturelands, application of biosolids, composting; poultry and dairies. However, during the 1996 Permit term, the conversion of agricultural lands and open space to other "developed" land uses has been ongoing and will continue<sup>4</sup>.

## **2.3 STORMWATER DRAINAGE SYSTEMS**

The RCFC&WCD storm drain system consists of an estimated 287 miles of drainage facilities (133 miles open channel; 19 miles of levee; 135 miles underground storm drain). The Co-Permittees storm drain systems include approximately 148 miles (120 miles of underground

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<sup>2</sup> Under Section 303(d) of the Clean Water Act, states, territories, and authorized tribes are required to develop lists of impaired waters. Impaired waters are waters that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. Priority rankings must be identified for impaired waters and Total Maximum Daily Loads (TMDLs) must be developed for impaired waters.

<sup>3</sup> Western Riverside Council of Governments. Long-range population growth forecast approved by Executive Committee on June 5, 2000.

<sup>4</sup> The Western Riverside County Multi-Species Habitat Conservation Plan prepared in 1995 projected that during the 20 years from 1995 through 2015, more than 300,000 acres of agricultural lands and open space would be developed for other uses.

pipe; 28 miles open channel) of drainage facilities. Maps depicting the location of the Permittees' storm drain facilities are included as Appendix F<sup>5</sup>.

Significant changes and additions made to regional stormwater drainage facilities during the period March 1996 through August 2000 include:

- Lake Elsinore Outlet Channel (Lake Elsinore)
- Lakeview Dam (Lakeview/Nuevo)
- Wasson Canyon Debris Basin (Lake Elsinore)
- Oak Street Channel (Corona)
- Eastvale Line B (Eastvale)<sup>6</sup>
- Eastvale Line D (Eastvale)<sup>6</sup>
- Day Creek Channel (Mira Loma)
- San Sevaine Channel (Mira Loma)
- McVicker Canyon Basin (Lake Elsinore)

Anticipated major changes and additions to regional stormwater drainage facilities for the period from September 2000 to June 2005 include:

- County Line Channel (Eastvale)
- Ortega Channel Debris Basin (Lake Elsinore)
- Cajalco Dam (Lake Mathews)
- Gavilan Hills Debris Basin (Lake Mathews)
- San Jacinto River @ Ramona Expressway (Nuevo)
- Eastvale Line E (Eastvale)<sup>6</sup>
- Gunnerson Pond Restoration (Lake Elsinore)
- Collier Marsh Restoration (Lake Elsinore)
- Nason Basin (Moreno Valley)

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<sup>5</sup> [Note: This denotation of this appendix is intentionally out of sequence. The drainage facility maps are intentionally included as the last appendix to the ROWD to support ease of use of this document.]

<sup>6</sup> Indicates a new stormwater outfall to the Santa Ana River.



Each year, the Permittees are asked to report new additions to their respective municipal storm drain systems to the RCFC&WCD. These new facilities are then added to the updated facilities maps that are included in the Annual Report.

This section of the ROWD will briefly summarize the significant activities performed by the Permittees during the term of the 1996 Permit. Extensive detail is not included in this ROWD since the Permittees have submitted Annual Progress Reports in prior years, and in November 2000 will also submit an Annual Progress Report for the year 1999-2000.

### **3.1 PROGRAM MANAGEMENT AND ADMINISTRATION**

During the term of the 1996 Permit, the Principal Permittee and the Co-Permittees have operated under an Implementation Agreement that sets forth the responsibilities of the Principal Permittee and the Co-Permittees as defined in the 1996 Permit. A copy of that Implementation Agreement is provided in Appendix A.

The Permittees have adopted local ordinances regarding the management of stormwater and urban runoff. The ordinances provide the Permittees with the legal authority to implement the requirements of the 1996 Permit and the key regulatory requirements contained in 40 CFR Section 122.26(d)(2)(i)(A-F). The Permittees have also provided certification of adequate legal authority to implement the SAR DAMP to the Santa Ana Regional Board.

The RCFC&WCD, in its role as Principal Permittee, administers several area-wide programs in consultation with the Co-Permittees. The area-wide programs include:

- Hazardous Materials Emergency Response
- Household Hazardous Waste Collection/ABOP,
- Industrial/Commercial Compliance Assistance Program, and
- Public Education and Outreach.

Copies of the interagency agreements supporting these area-wide programs are provided in Appendix B.

### **3.2 ELIMINATION OF ILLICIT CONNECTIONS AND ILLEGAL DISCHARGES**

The Permittees have programs in place to eliminate illicit connections. Some of the Permittees conduct this aspect of their stormwater program as a part of the routine maintenance of their storm drain facilities. Other Permittees have conducted focused efforts specifically to identify illicit connections.

The Permittees also have programs in place to respond to illegal discharges. Predominantly, illegal discharges are reported by the public or by municipal field personnel. As part of the area-

wide program, RCFC&WCD continues to provide financial support to the County's Hazardous Materials Emergency Response Team to ensure that hazardous materials from spills or dumping have minimal impact on storm drain systems and receiving waters. RCFC&WCD also provides funding to support the County Department of Environmental Health's Household Hazardous Waste Collection program. Copies of the agreements to provide funding for these programs are included in Appendix B.

The Permittees initiated development of an Enforcement Compliance Strategy for ensuring that construction sites, commercial establishments, and industrial facilities operate in compliance with the local stormwater and urban runoff ordinances and/or local erosion control ordinances. In August 1999 RCFC&WCD and the County's Environmental Health Department executed an agreement that provides the framework for an area-wide Commercial and Industrial Compliance Assistance Program. A copy of this agreement is provided in Appendix B.

### **3.3 MUNICIPAL ACTIVITIES AND FACILITIES**

The Permittees' Municipal Facilities Strategy was conditionally approved by the Executive Officer of the Santa Ana Regional Board on October 30, 1997. The Municipal Facilities Strategy provides guidance for identifying potential stormwater pollutant sources and for selecting appropriate BMPs for implementation at identified facilities of concern. The Permittees are implementing the provisions of the Municipal Facilities Strategy within their respective jurisdictions. To assist the Permittees in implementing the Municipal Facilities Strategy, workshops focused on stormwater regulatory requirements and best management practices related to municipal maintenance facilities and roadway maintenance activities were conducted in March 2000.

### **3.4 DEVELOPMENT PLANNING**

The 1996 Permit requires the Permittees to incorporate stormwater quality considerations for both construction phase and the post-construction phase (operation) into the California Environmental Quality Act (CEQA) reviews within their jurisdiction. Those Permittees that have updated their General Plan or elements of their General Plan have addressed stormwater quality management issues in the update. Additionally, those Permittees that anticipate revising their General Plan in the near future have indicated that stormwater quality management issues will be included in the revision.

In July 1996 the Principal Permittee distributed "New Development Guidelines," Supplement A to the SAR DAMP, and its attachment "Selection and Design of Stormwater Quality Controls," to the Co-Permittees notifying them that they should begin implementation. The general framework of the "New Development Guidelines" is to require new development (or significant redevelopment) to include appropriate non-structural BMPs and appropriate "routine" structural BMPs<sup>7</sup> into development plans prior to the issuance of building/grading permits or prior to map recordation, as applicable. Additionally, where specific water quality impairments exist and may be affected by development proposals, "special" structural BMPs<sup>8</sup> should be considered. The "New Development Guidelines" also specify that this framework is required of public agency capital projects irrespective of whether the local jurisdiction issues formal permits for itself or its contractors. The "New Development Guidelines" are regularly provided to architects, engineers, developers, builders, and construction contractors upon request. A copy of the "New Development Guidelines" is included as Appendix C of this ROWD.

### **3.5 CONSTRUCTION ACTIVITIES**

The Permittees believe that their ordinances are adequate to control discharges from construction sites to their storm drain systems. For construction projects that will disturb more than 5 acres, all of the Co-Permittees require some form of proof for compliance with California's General Permit for Stormwater Discharges Associated with Construction Activity (Construction Stormwater Permit) prior to issuance of building/grading permits. Most of the Co-Permittees require a copy of the Notice of Intent (NOI) filed with the State Water Resources Control Board. However, at least one Co-Permittee also requires submittal of the Stormwater Pollution Prevention Plan (SWPPP) prepared for the construction site. Each of the Co-Permittees have provided or plan to provide training for their construction inspectors regarding the proper installation and maintenance of erosion and sediment control BMPs. Education and outreach to the building industry (developers, construction contractors, engineering firms, etc.) regarding managing discharges from construction sites has been a component of the StormWater/CleanWater Protection Program (SW/CWPP), the Permittees' area-wide public education and outreach program.

<sup>7</sup> "Routine" structural BMPs are economical, practicable, small-scale measures that can be feasibly applied to the smallest unit of development.

<sup>8</sup> "Special" structural BMPs are engineered facilities designed to address specific water quality problems identified in the watershed.

## 3.6 PUBLIC EDUCATION AND OUTREACH

The Permittees have developed a strong area-wide public education and outreach program known as the SW/CWPP. The goals of the SW/CWPP are to foster broad public awareness of water pollution concerns, to increase public acceptance of pollution prevention activities to curtail everyday human behaviors that contribute to water pollution problems, and to promote stewardship of local water resources. A copy of the interagency agreement regarding the SW/CWPP is included in Appendix B.

Pollution prevention is a major focus of the SW/CWPP. Common stormwater pollution prevention themes that are emphasized throughout all aspects of the SW/CWPP's public outreach activities and program materials include:

- Proper disposal of household hazardous wastes;
- Proper disposal of used motor oil;
- Guidelines to reduce excessive use of pesticides and fertilizers;
- Good housekeeping BMPs for homeowners and business operators; and
- Proper disposal of pet waste.

The public education program uses numerous outreach methods to reach audiences of all ages and interests. Table 1 presents the various outreach methods for different audiences.

**TABLE 1. Public Education and Outreach Methods**

Audience	Outreach Methods
Residents; General Public	<ul style="list-style-type: none"> <li>• Pamphlets • Brochures • Radio</li> <li>• TV/Cable • Utility Bill Inserts</li> <li>• Direct Mail • Newspaper Inserts</li> <li>• Advertisements • Community Events</li> <li>• Community • Presentations • Surveys</li> </ul>
Groundskeepers; Home Gardeners	<ul style="list-style-type: none"> <li>• Focused Brochures • Posters</li> <li>• Workshops • Newspaper Inserts</li> </ul>
Commercial; Industrial	<ul style="list-style-type: none"> <li>• Brochures • Posters</li> </ul>
Students	<ul style="list-style-type: none"> <li>• Classroom Presentations • Videos</li> <li>• Workbook Materials • Coloring Contests</li> </ul>
General Contractors; Construction Contractors	<ul style="list-style-type: none"> <li>• Focused Brochures</li> <li>• Information at Public Permit Counters</li> <li>• "New Development Guidelines"</li> </ul>
Architects; Developers	<ul style="list-style-type: none"> <li>• Focused Brochures</li> <li>• Information at Public Permit Counters</li> <li>• "New Development Guidelines"</li> </ul>



To leverage limited resources, the SW/CWPP have frequently partners with various entities (Riverside County's Waste Management Department, Western Riverside Council of Governments, Los Angeles County Department of Public Works, Riverside Corona Resource Conservation District, and the California Conservation Corp, etc.) to promote conservation, pollution prevention and environmental awareness. The education program also expands outreach opportunities by collaborating with entities such as Riverside County's Agricultural Commissioner and University California Cooperative Extension to promote proper use of pesticides and herbicides to specific target groups such as pesticide applicators home gardeners.

The SW/CWPP recently developed an Internet website that provides information to residents and businesses about the problem of storm water pollution and offers simple pollution prevention activities (BMPs) to help keep our water clean. The website also provides a materials order form for all educational materials. A tracking mechanism for the number of queries on the website will soon be added. The website address is: [www.co.riverside.ca.us/depts/flood](http://www.co.riverside.ca.us/depts/flood).

Since 1994, the SW/CWPP has operated a toll-free hotline for the reporting of illegal dumping activity and for providing free public education information. Beginning in 1998 the SW/CWPP has kept record of calls to the toll-free hotline number. The toll-free hotline number received 290 and 554 calls in 1998 and 1999, respectively. There have been 137 calls to the hotline during January 1 – June 30, 2000. Of these calls, in 1998 and 1999, 20 and 26 calls were made to report illegal dumping activities, respectively. By mid-year 2000, 12 calls have been made to report illegal dumping. The other calls are requests for SW/CWPP brochures and other program information.

New outreach materials that are currently under development include:

- a pet waste brochure to be distributed at animal shelters and pet stores throughout Riverside County;
- a BMP brochure for horse owners and the equine industry;
- a BMP brochure for pool discharges; and
- a new general outreach brochure that provides BMPs for residents and the contractors they may hire to perform work for them.



### **3.7 MONITORING PROGRAM**

#### **3.7.1 Overview of Monitoring Program**

During the term of the 1996 Permit, the Principal Permittee has implemented the Consolidated Program for Water Quality Monitoring (Monitoring Program). This Monitoring Program was developed in 1994 to integrate the requirements of the three area-wide municipal stormwater NPDES permits issued by the three different Regional Water Quality Control Board jurisdictions covering the County of Riverside. The Monitoring Program primarily utilizes three types of locations for sampling: storm drain outfalls, receiving water, and sediment. The goal of the Monitoring Program is to develop information that can be used to support effective implementation of the SAR DAMP. The specific objectives of the Monitoring Program are:

1. Assess mass loading rates from urban storm drains to the receiving waters;
2. Assess the influence of land use on the water quality of runoff;
3. Verify and control illicit discharges;
4. Conduct compliance monitoring of water quality;
5. Assess the effectiveness of various urban stormwater management practices designed to control pollution;
6. Identify problem areas and/or trends;
7. Establish a database for future reference, research, and analysis;
8. Identify baseline conditions; and
9. Identify pollutants of concern.

Nearly all of the storm drain outfalls are located in urbanized watersheds at the end of improved drainage facilities (e.g., storm drains or channels) that discharge to a receiving water. The land use has not changed significantly over the short-term in most cases for the catchments associated with the storm drain outfalls. Data collected from storm drain outfall locations may be used to characterize pollutant loadings discharged from their respective catchment areas and allow the estimation of pollutant mass loads from storm drains to receiving waters (Objective #1, #5 and #6). Only a few of the storm drain outfall catchments are of sufficiently uniform land use to assess pollutant loads that are land use specific (Objective #2).

Receiving water sampling locations were selected to provide baseline information of ambient water quality. Receiving waters are defined as those water bodies that collect, convey, or receive stormwater runoff. Examples of receiving waters include creeks, rivers, lakes, reservoirs, and infiltration basins.

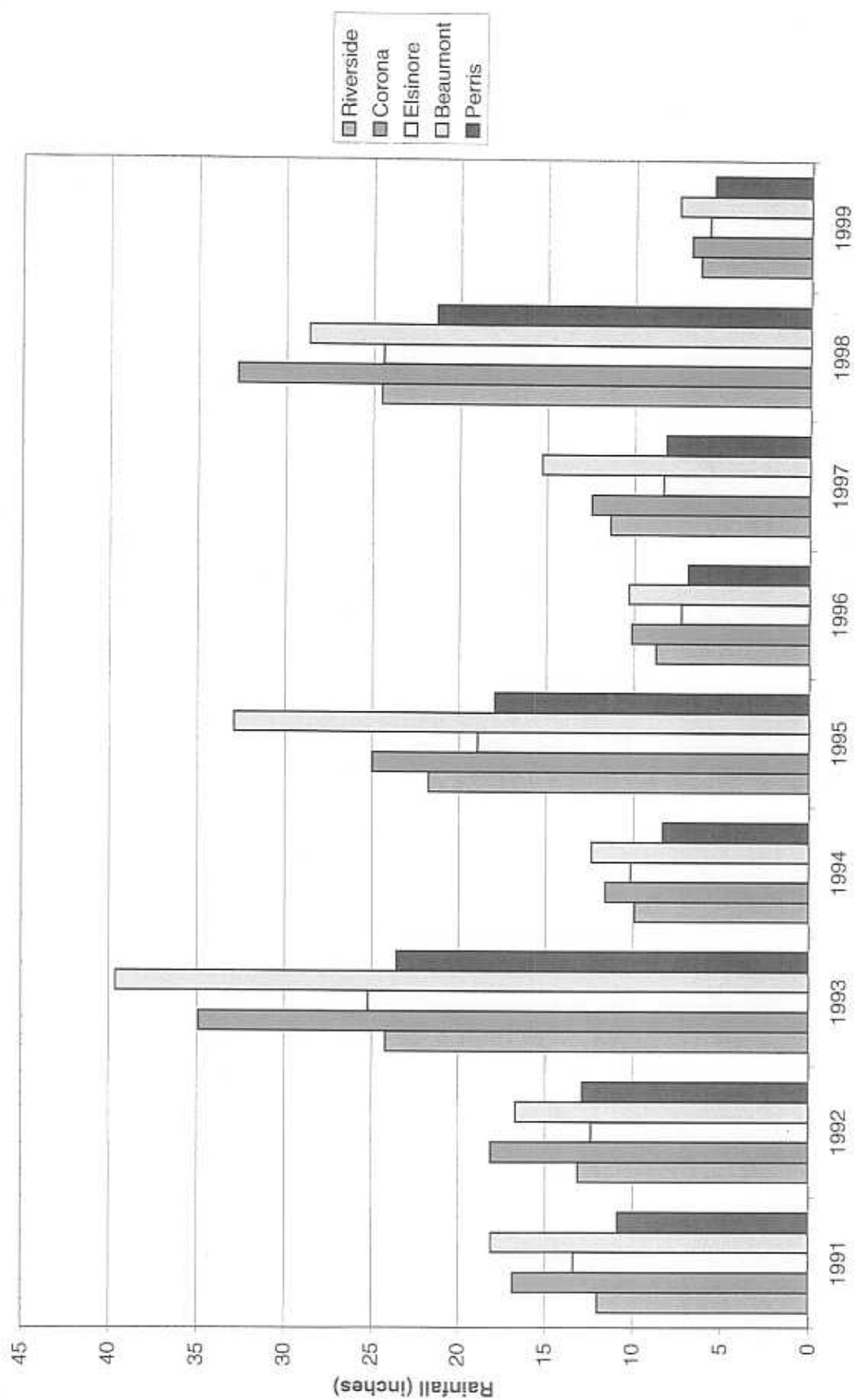
Sediment sampling locations were chosen to assess the accumulation of pollutants in the sediment deposited in drainage facilities. Such information is useful in evaluating appropriate maintenance activities for flood control basins and ensuring the proper disposal of excavated material. Sediment sampling locations are located in detention/retention basins and channels having a natural bed (presumably having settled material from the storm drain system).

Maps showing the Permittees' storm drain facilities have been updated each year and included in the Annual Program Reports. A sampling data base (spreadsheet format) that includes channel type, location information, nearest rain gauge, type of sampling location (outfall vs. receiving water), sampling methods and equipment, tributary area, and land use mix is currently being updated. The RCFC&WCD continues to make significant progress in the development of its Geographic Information System (GIS) capabilities. As a result of this progress, RCFC&WCD expects to improve its ability to integrate its water quality data with current land use and drainage facility information.

### **3.7.2 Rainfall**

In Riverside County rainfall and runoff vary significantly between different locales and from year to year. Figure 1 shows the variability in annual rainfall at five selected locations for the Fiscal Years 1991 through 1999. The annual rainfall data shown in Figure 1 are from July 1 – June 30. Mean annual rainfall at all five locations (Riverside, Corona, Elsinore, Beaumont, and Perris) exceeded the value of 10-12 inches cited for the Santa Ana Region in the 1996 NPDES Permit. This is because over the last two permit periods, there have been three very wet years—1993, 1995, and 1998. Rainfall totals during the wet years ranged from about 18 inches at Perris in 1995 to nearly 40 inches at Beaumont in 1993. In contrast, 1999 was unusually dry, with annual totals ranging from 5.5 inches at Perris to 7.5 inches at Beaumont. Typically, almost all the precipitation in this area falls between mid-November through mid-April, with January and February being the wettest months.

Figure 1. Annual Rainfall (inches)



### 3.7.3 Sample Types

The Monitoring Program describes the following sample types:

- wet weather,
- dry weather,
- sediment,
- microbial,
- screening,
- complaints, and
- special studies.

Wet weather, dry weather, and sediment sample types have been the primary focus of monitoring efforts to date.

Wet weather samples were collected during storm events from outfalls to assess the pollutant loads originating from land surfaces, streets, parking lots, houses, etc. Wet weather samples were also occasionally obtained from receiving water locations. Wet weather monitoring involves weather forecasting, scheduling field crews, collecting a representative sample from the runoff hydrograph, compositing samples, and laboratory analysis. These data support program objectives #1, #2 (to a limited extent), #4, #5, #6, and #9.

Dry weather samples are collected as a means to assess the quality of dry weather urban runoff discharged to a receiving water and to help identify where illicit connections and illegal discharges to the storm drain system may be present. Dry weather flow indicates a source not related to a rainfall, which may reflect an illicit connection or an illegal discharge. Both wet and dry weather data are required to estimate the total pollutant loads to receiving water (Objective #1).

Sediment samples are mainly collected to assess the presence of pollutants in sediments that may accumulate in flood control basins and channels.

Screening tests are conducted to provide an infrequent, but thorough, examination of discharges from the stormwater drainage system. Screening tests are conducted for a more extensive list of parameters, at fewer locations, approximately once every 5 years. Sampling and analysis for microbes has generally been limited to a case-by-case basis in response to a complaint or investigation of potential illicit connection/illegal discharge.

### 3.7.4 Sampling Performed To Date

Water samples or sediment samples have been collected at a total of 74 locations over the last nine seasons (years). The 74 locations are comprised of 45 storm drain outfalls, 12 receiving water, 15 sediment, and 2 special interest sampling locations. Table 2 lists the sampling locations by type—outfall, receiving water, sediment, and special interest, respectively. Locations are listed by ID number and location name. Station type and sample type are also indicated. Figures 2a and 2b show the approximate location of sampling locations and illustrate the geographic distribution, or coverage, of the monitoring program.

Samples have not been taken at each location for each season and in some cases wet weather samples were collected, or dry weather samples, or both. In the most recent season for which data are available (1998-1999), samples were collected from 17 storm drain outfalls, 9 receiving waters, and 15 sediment locations.

Table 2 also provides the fiscal year when data was collected, sample type (wet weather, dry weather, or soil), and the total number of samples collected. Both wet weather and dry weather samples were collected at storm drain outfalls and receiving water locations. Over the period for fiscal years 1990 through 1999 the number of storm drain outfall locations at which dry weather samples were collected ranged from 10 to 22 locations in a year. Similarly, the number of storm drain outfall locations at which wet weather samples were collected ranged from 10 to 26 locations in a year. Over the period for fiscal years 1990 through 1999 the number of receiving water locations at which dry weather samples were collected ranged from 3 to 9 locations per year and the number of locations for wet weather samples ranged from 1 to 4 in a year. Seven receiving water locations had between 1 and 3 years of both wet and dry weather data.

The total number of samples collected and the average number of samples per year are listed in the last two columns of Table 2. This information provides some indication as to the statistical robustness of the data collected to date. In other words, are enough data available to perform an adequate statistical analysis? Generally, a minimum of five or more data points are required to produce a satisfactory mean and standard deviation, depending on the variability of the data. The number of similar type samples (e.g., wet samples) collected within a given year ranges from one to five, but more typically falls within two to three samples. Assessing long-term trends and BMP effectiveness typically requires more data points. The minimum number of years needed to detect a long-term trend depends upon the variability of the data and the magnitude of the trend, which in turn depends upon the extent to which BMPs are being implemented in the drainage area (watershed) being monitored.

**3.7.5 Regional Monitoring Coordination**

The RCFC&WCD has participated in discussions leading toward the formation of a regional monitoring consortium in Southern California. The consortium currently includes the Los Angeles, San Diego, and Santa Ana Regional Water Quality Control Boards and each of the Principal Permittees in Southern California (i.e., the Counties of Los Angeles, Orange, San Bernardino, San Diego and Ventura), and the City of Long Beach. The overall goal for this consortium is to establish a Southern California stormwater research and monitoring program that would focus on improving stormwater monitoring science, coordination between data collection programs, and evaluating the effects of stormwater discharges to receiving waters. A copy of the agreement and the scope of work for the initial task funded by this consortium are included in Appendix D.



TABLE 2. Sampling Locations, Type, and Years of Data Collection

Location ID No.	Location Name	Station Type Outfall	Sample Type Water	1990-1991 Wet	1991-1992 Wet	1992-1993 Wet	1993-1994 Wet	1994-1995 Wet	1995-1996 Wet	1996-1997 Wet	1997-1998 Wet	1998-1999 Wet	Total Samples Collected	Average Samples Per Year
40	Corona SD NPDES - Ln K Below Harrison & Sherman Sts	x	x											
316	Sunnyvale Channel NPDES - Line B @ Alessandro & Heacock	x	x	2	1	3	3	3	3	1	2	3	43	5
317	La Sierra Channel NPDES Hwy 91 to Outfall @ Arlington Ch	x	x	2	1	3	3	3	3	3	2	1	19	2
318	Hemel Channel NPDES - Sanderson Av to Castan Av	x	x										30	3
329	Anza Channel NPDES @ Arlington Av & Monroe Ch	x	x	2	1	3	3	3	3	2	1	5	15	2
330	Arlington Valley Channel NPDES @ Radio Rd & Temescal Ch	x	x	2	1	3	3	3	3	2	3	5	56	6
336	Bly Channel NPDES @ Juniper Rd	x	x	2	1	3	3	3	3	4	4	3	32	4
337	Box Springs Channel NPDES - Outfall @ Tequesquite Wash	x	x	2	1	2	2	2	2			1	20	2
364	Magnolia Center NPDES - Storm Drain Outfall @ SARiv	x	x	2	1	2	2	2	2	3	3	5	55	6
375	San Savane NPDES Lower Channel @ Juniper Rd	x	x	2	1	3	3	3	3	1	3	2	56	6
383	Sunnyvale NPDES - Lower Channel @ Rio Rd	x	x	2	1	3	3	3	3	2	3	2	26	3
700	Juniper Channel & Flood Basin Outfall	x	x	2	1	2	2	3	3	3	4	3	30	3
701	Temescal Creek Channel @ Sixth	x	x	2	1	3	3	3	3				5	1
702	University Wash Channel - Market & Bowling Green	x	x	2	1	3	3	3	3				14	2
704	Day Creek Channel	x	x	2	1	3	3	3	3				30	3
705	San Savane Channel - Upper	x	x	2	1	3	3	3	3				6	1
706	Monroe Storm Drain - Riverside	x	x	2	1	3	3	3	3				4	0
707	North Norco Channel @ Country Club Lane	x	x	2	1	3	3	3	3				5	1
708	South Norco Channel @ River Road	x	x	2	1	3	3	3	3				19	2
709	Wardlow Canyon Wash @ Green River Road - West Corona	x	x	2	1	3	3	3	3				5	1
710	El Centro Channel Outfall below Temescal Cyn Rd	x	x	2	1	3	3	3	3				5	1
711	Riverside City Drain Fairmont Park Outfall to L Evans	x	x	2	1	3	3	3	3				4	0
712	Leach Canyon Channel Outfall @ Lake Elsinore	x	x	2	1	3	3	3	3				45	5
713	South Riverside Drive Channel @ Grand Avenue - L Elsinore	x	x	2	1	3	3	3	3				4	0
714	Omega Canyon Channel - L Elsinore	x	x	2	1	3	3	3	3				4	0
716	Parkview Hospital catchbasin inlet @ Garfield Street	x	x	2	1	3	3	3	3				4	0
717	Trailer Park Outfall @ Slatton Channel & Lyon Av - Hemet	x	x	2	1	3	3	3	3				30	3
721	Temescal Channel Outfall @ Lincoln Avenue - Corona	x	x	2	1	3	3	3	3				25	3
722	Tequesquite Wash below Box Springs Channel	x	x	2	1	3	3	3	3				23	3
726	Phoenix Avenue Storm Drain Outfall - Riverside	x	x	2	1	3	3	3	3				7	1
731	Day Creek Channel @ Belgrove Avenue	x	x	2	1	3	3	3	3				2	0
732	Pyrite Channel @ Hwy 60 D/S	x	x	2	1	3	3	3	3				1	0
733	Oak Street Channel Outfall - Corona	x	x	2	1	3	3	3	3				1	0
734	Fontana Lateral Extension	x	x	2	1	3	3	3	3				1	0
737	Hola Lake Outfall @ Breached Dam	x	x	2	1	3	3	3	3				5	1
752	Perito Line J Sunset Av SD Chan below Murieta Rd	x	x	2	1	3	3	3	3				8	1
758	Channel @ Cherry & Eighth Streets - Beaumont	x	x	2	1	3	3	3	3				1	0
791	S. Jacinto Rr @ Davis Rd	x	x	2	1	3	3	3	3				5	1
793	RCFC Parking Lot	x	x	2	1	3	3	3	3				1	0
797	Rathna Channel @ Sunnydop	x	x	2	1	3	3	3	3				1	0
805	County Line Tract West Out	x	x	2	1	3	3	3	3				1	0
807	Rubicon SD Outfall	x	x	2	1	3	3	3	3				1	0
820	Sunnyvale Ch @ Cactus	x	x	2	1	3	3	3	3				2	0
821	Kilching Ch @ M81 Junc	x	x	2	1	3	3	3	3				1	0
826	SJAC Line J @ Alessandro Av	x	x	2	1	3	3	3	3				1	0

TABLE 2. Sampling Locations, Type, and Years of Data Collection

Location ID No.	Location Name	Station Type Outfall	Sample Type Water	1990-1991 Wet Dry	1991-1992 Wet Dry	1992-1993 Wet Dry	1993-1994 Wet Dry	1994-1995 Wet Dry	1995-1996 Wet Dry	1996-1997 Wet Dry	1997-1998 Wet Dry	1998-1999 Wet Dry	Total Samples Collected	Average Samples Per Year
Receiving Water Locations														
718	Lake Elmore (boat ramps of old state park entrance)	X	X										23	3
719	Lake Evans Spillway Outlet near the Legion Foot	X	X										31	3
720	Lake Mathews @ the boat docking ramp	X	X										26	3
723	ACFC Duck Pond		X										3	0
753	Temescal Gravel Pit near Outlet	X	X										19	2
754	Santa Ana River @ River Rd	X	X										20	2
756	RR Canyon Lake @Dam	X	X										2	1
759	San Jacinto Riv @ Goetz Rd	X	X										6	1
765	Salt Creek @ RR Cyn Rd	X	X										2	0
792	S. Jacinto Riv @ Cranston	X	X										2	0
803	Cajalco Ck @ Soberania	X	X										16	2
827	San Jacinto River at Elsinore-USGS Station	X	X										12	1
Sediment Locations														
154	Penas Valley Drain USGS Urban runoff study	X	X										25	3
357	Four Corners NPDES-Storm Drain Outlet @ Lehi Dr		X										5	1
703	Rubidoux Flood Basin	X	X										35	4
715	Canyon Springs Flood Basin at Eucalyptus/Dry Edgemont	X	X										6	1
736	North Norco Channel Soil @County Club Lane	X	X										42	5
738	Anza Flood Basin Park Soil	X	X										10	1
739	Monroe Flood Basin Soil	X	X										7	1
740	Juniper Flood Basin Soil	X	X										8	1
742	Kansas Flood Basin Soil	X	X										9	1
743	Marlborough Flood Basin Soil	X	X										5	1
744	Columbia Flood Basin Soil	X	X										8	1
747	Salt Creek Soil between Murietta & Newport Roads	X	X										5	1
748	Hemel Channel @Warren Road	X	X										5	1
749	San Jacinto SD Outlet @Seventh St	X	X										5	1
750	Buena Vista Flood Basin	X	X										6	1
Special Interest														
808	Region 8 Tap Waters		X										1	0
809	Region 8 Misc & Complaints		X										1	1

Notes: nDes indicates the sample was not designated as wet or dry season.  
First soil samples were taken in 1993-94.  
Sampling ID Nos. were redesignated in 1998.

During the term of the 2001 Permit, the Permittees will continue development and implementation of all the various components of the current area-wide stormwater quality management program. The principal goal is to more effectively manage stormwater quality based on information gained, as well as through coordination with new regulatory requirements and other watershed initiatives. The general activities that will be conducted by the Permittees include:

- Establishing a new management structure.
- Updating the SAR DAMP.
- Developing additional municipal employee training programs.
- Continue the development and implementation of the Public Education and Outreach Program.
- Revise the Monitoring Program.
- Development and implementation of a stakeholder process for the development and implementation of new development standards.

#### **4.1 FORM NEW MANAGEMENT STRUCTURE**

The objective of revising the management structure is to strengthen the institutional foundation for effectively managing the area-wide municipal stormwater program. A revised management structure that more directly involves Permittee decision-makers is needed to promote more consistent program implementation, address the increased need for coordination with other regional water quality initiatives, and to more effectively respond to the expanding regulatory, funding and implementation requirements of municipal stormwater management programs. This need is reflected in the recent initiation of Total Maximum Daily Load (TMDL) programs in the San Jacinto River watershed, the recent request for a California Water Code (CWC) Section 13267 report on elevated bacteria concentrations in the Santa Ana River, and the need to develop consistent regional approaches to addressing specific aspects of municipal stormwater programs such as post-construction controls. The momentum of these various water quality initiatives is increasing and will have significant implications for both the development community and for resource allocation within municipalities.

The existing management structure consists of the following elements:

- Principal Permittee (RCFC&WCD) has administrative responsibility for facilitating development and implementation of the SAR DAMP. The Principal Permittee has no regulatory authority over the Co-Permittees. The Principal Permittee chairs the Permittees' Advisory Committee, provides technical expertise and guidance, maintains

the benefit assessment program that funds certain components of the area-wide stormwater management program, directs consultants in providing technical assistance, conducts stormwater monitoring, coordinates submittal of compliance reports, and coordinates with organizations such as the Riverside-Corona Resource Conservation District in the implementation of the public education program.

- A Permittee Advisory Committee oversees the development and implementation of the SAR DAMP and the monitoring and public education programs. In addition, this committee provides informal coordination with related programs and response to legislative and regulatory initiatives. This committee consists of staff representatives from each of the Co-Permittees; however, decision makers (city managers, directors of public works or equivalents) generally have not participated in this committee. The level of municipal stormwater program information and requirements that is communicated to decision makers varies greatly among the Permittees. This may be due to staff unfamiliarity with the stormwater program due to turnover or lack of access to decision makers.

Following the submittal of this ROWD, the Permittees will begin evaluating alternative arrangements for management of the municipal stormwater management program. The objectives of this activity will include promoting more effective communication of program issues with decision makers, improving coordination with other related programs, increasing participation by stakeholders and increased ability to assess and address program funding needs. A survey of the management structure of other municipal stormwater programs in California will be conducted to assist in the development of a final management structure.

A revised management structure that will be proposed for consideration by the Permittees includes the following elements:

- A Management Steering Committee will be established to address municipal stormwater management policy, review and approve a revised SAR DAMP, and Implementation Agreement revisions. In addition, this committee will facilitate coordination with related water quality management programs and monitoring and responding to new legislative and regulatory initiatives. The Management Steering Committee will consist of three city managers or equivalent representatives from the Co-Permittees and an executive-level representative from the County. The General Manager-Chief Engineer of the RCFC&WCD will participate on the Management Steering Committee as Chair. The Principal Permittee will provide staff support to the Management Steering Committee. The Management Steering Committee will meet quarterly or as determined by the Chair.
- A Technical Committee will be established consisting of representatives formally appointed by the city manager or equivalent of each Permittee. The purpose of the Technical Committee will be to direct the development of the SAR DAMP and to coordinate the implementation of the overall municipal stormwater program. This committee will assist in providing technical support to facilitate coordination with related water quality management programs and monitoring and responding to new legislative



and regulatory initiatives. A representative of the Principal Permittee will chair and provide staff reports to the Technical Committee. The Technical Committee meetings will be open to USEPA staff, Santa Ana Regional Board staff, and other interested parties.

- Work Groups will be established by the Technical Committee to oversee the development and implementation of SAR DAMP program components. The Work Groups will include Permittee representatives, industry representatives, environmental advocacy groups, and other stakeholders as appropriate. A Permittee representative will chair each Work Group. The Work Group meetings will be open to USEPA staff, Santa Ana Regional Board staff, and other interested parties. Initially, Work Groups will be established to guide the following program elements:
  - Program Implementation / Public Education
  - Construction / New Development (post construction)
  - Water Quality Monitoring
- The Implementation Agreement will be revised to reflect the revised management structure and to provide for funding of the SAR DAMP update and related special studies as needed.

## **4.2 REVISE THE SAR DAMP**

The SAR DAMP was organized based on the requirements of the "Early" Permit issued in 1990. Additional program elements required by the 1996 Permit were developed separately and have not been formally incorporated into the SAR DAMP. Some elements of the SAR DAMP may be obsolete or are no longer relevant. The development of TMDLs and other watershed planning efforts that will affect management of municipal stormwater discharges have also been initiated in the Santa Ana Region. Coordination with such programs should be addressed in the SAR DAMP. The Permittees will initiate revision of the SAR DAMP following submittal of the ROWD. The work plan for the revision of the SAR DAMP will be amended to accommodate any additional requirements of the 2001 Permit.

### **4.2.1 Objectives of SAR DAMP Update**

The objectives for the SAR DAMP update are to:

- Improve management of municipal stormwater discharges to protect the beneficial uses of receiving waters in the region
- Incorporate all elements of the stormwater management program into one core document
- Remove obsolete information
- Facilitate more consistent implementation of the SAR DAMP

- Improve the clarity and usefulness of the guidance provided to the Permittees
- Provide for coordination with watershed management initiatives, TMDL programs and other programs affecting management of municipal stormwater discharges
- Address any new requirements of the 2001 Permit
- Improve the institutional foundation for the municipal stormwater management program

#### **4.2.2 Permittee Comments**

In the development of this ROWD, the Permittees were provided the opportunity to comment on the SAR DAMP. A total of ten comment letters were received, plus direct input from the RCFC&WCD. Several comments appear to reflect a lack of understanding or ambiguity with regard to the SAR DAMP, the various stormwater management program elements, and implementation of the municipal stormwater program as a whole. In some cases, this lack of understanding may be attributed to turnover of Permittee staff over the course of the two 5-year permit periods. Also, the SAR DAMP is over seven years old. Thus, it appears some Permittee staff may be in need of SAR DAMP and stormwater permit "refresher" training as described later in Section 4.3.

Some of the Permittees had specific comments on the structure, clarity, and usefulness of the SAR DAMP, while others had more general comments on the overall stormwater permit program. Brief summaries of some of the Permittee comments are included in Table 3. These comments have been considered and incorporated into this ROWD, as appropriate. Copies of all Permittee comments are included as Appendix E of this report.

Some Permittees also submitted copies of their individual stormwater management plans, implementation plans, annual report information and other supporting documents. These documents generally appear to follow the existing SAR DAMP and other program documents, such as the Municipal Facilities Strategy and Enforcement/Compliance Strategy.



TABLE 3: Permittee Comments on SAR Damp and Stormwater Program

Specific Permittee Comments on the SAR DAMP	General Permittee Comments on Stormwater Permit Program
<ul style="list-style-type: none"> <li>▪ Include a BMP index for quick reference.</li> <li>▪ Include a glossary of water science and stormwater management terms.</li> <li>▪ List each Permittee along with a list of Permittee committee members, the newly required responsibilities of Permittees and committees and whether the Permittee meetings are open or closed to the public.</li> <li>▪ Check redundancy between current annual reporting forms and reporting forms provided in the SAR-DAMP.</li> <li>▪ Add reasonable compliance/completion schedule for each program element.</li> <li>▪ Utilize performance measures for annual reporting.</li> <li>▪ Form a task force sub-committee to develop standards for performance measures and financial/fiscal analysis reporting.</li> <li>▪ Develop computerized recording keeping for all Permittees.</li> <li>▪ Submit quarterly reports on program implementation to Executive Committee.</li> <li>▪ Emphasize meeting attendance.</li> <li>▪ Do not have each Permittee submit annual reports under individual municipal letterhead to avoid appearing as a disclaimer.</li> <li>▪ Improve the reporting program. Much information generated for annual reports is redundant, remains unchanged year to year, and is difficult to obtain/quantify and isolates information specific for the program.</li> <li>▪ Do not include extreme new BMPs or other requirements not required by the RWQCB and let the Permittees set any potential criteria.</li> <li>▪ BMP programs such as public education and household hazardous waste collection are very useful.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Require reconnaissance survey only once.</li> <li>▪ MEP should include consideration of a municipality's ability to fund new BMP requirements.</li> <li>▪ Request that the State increase its participation in the training of local municipal staff and private development community.</li> <li>▪ Regularly report on the findings of the stormwater quality monitoring program to the Permittees.</li> <li>▪ Recommend a monitoring program tailored to the local area and involve Permittees in selecting monitoring locations.</li> <li>▪ Form an Executive Committee; reactivate the Task Force Sub-committee to complete the Enforcement/Compliance Strategy Document.</li> <li>▪ Obtain funding grants to test stormwater quality pilot products.</li> <li>▪ Numerical limits on stormwater are difficult to justify and impractical given the natural sources of pollutants and those generated from agricultural sources. The cost to treat all stormwater would be a financial hardship with little measurable gain to the area.</li> <li>▪ Consider a regional approach to enforcement [of the stormwater quality control discharge ordinance] by a single agency with citation powers, perhaps the state, to ensure uniformity, while Permittees would advise, report and implement BMPs to ensure compliance with the stormwater permit.</li> <li>▪ Limited number of staff and resources to keep up with the program and current fee and tax structure available to municipal governments does not provide adequate funding to increase local staff.</li> <li>▪ BMP training sessions held locally would be helpful.</li> </ul>

### 4.2.3 Information To Be Updated

The SAR DAMP has many sections containing information that is outdated, no longer relevant, or in need of updating. These sections include:

Section	Topic
1.1	Discussion of the Parent DAMP
1.2	DAMP Development Process
1.3	Regulatory Framework ✓
1.7	SAR DAMP Development Process
1.8	Public Involvement Process
2.3	Overview of Available Water Quality Data
2.4.1	Prioritized Water Quality Indicators
3.1–3.4	Plan for Existing Residential and Commercial/Industrial Areas – BMPs
4.1–4.3	Plan for Construction Sites and New Development
5.0	Funding Sources ✓
6.0	Annual Reporting Requirements ✓
7.0	Structural Controls ✓

These sections will be updated or eliminated, as appropriate, to reflect current SAR DAMP activities and programs, current management structure and administrative processes, as well as the requirements of the 2001 Permit.

### 4.2.4 Additional Information

Several key elements of the Permittees' current stormwater management program were developed after the SAR DAMP was first published, and will be incorporated into a revised SAR DAMP. For example, updated program management information will be incorporated, including discussions of the Permittees' legal authorities and Stormwater/Urban Runoff Management and Discharge Control Ordinances, program funding information (including a uniform format for budget reporting), management committees, institutional arrangements, etc. Also, the SAR DAMP will contain current copies of the Implementation Agreement and applicable interagency agreements as appendices.

The SAR DAMP will also include a description of certain requirements established by the 1996 Permit. For example, the SAR DAMP will describe the requirement that Permittees "shall report to the Executive Officer of the Regional Board...any industrial and/or construction facilities found not to be in compliance with the State's General Storm Water Permits or where the activities may be contributing pollutants to the waters of the U.S. ..." As another example, the requirements that Permittees (1) verify coverage under the Construction Stormwater Permit prior

to issuing grading or building permits, and (2) inform industrial facility operators of the need to comply with the California General Permit for Stormwater Discharges Associated with Industrial Activities (Industrial Stormwater Permit) before issuing occupancy permits will be addressed in the SAR DAMP. Additionally, the SAR DAMP should include a discussion of the Municipal Facilities Strategy and the Enforcement/Compliance Strategy, the Municipal Construction Project permitting provisions, and the New Development requirements (Supplement A). As each program component of the SAR DAMP is assessed and revised, the record keeping and reporting associated with the program component will also be developed. Also, the revised SAR DAMP will include procedures for revising the SAR DAMP over the 2001 Permit term to reflect new program components or significant changes in program components.

#### **4.2.5 BMP Reassessment/Update**

The BMPs identified in the SAR DAMP have not been updated since the term of the "Early" Permit. Since this period the Permittees and others have gained significant experience in the implementation of municipal stormwater programs and gained a greater understanding of BMP effectiveness and their appropriate application. In addition, an ongoing evolution of BMPs has occurred. Therefore, it is appropriate to conduct a reassessment of the SAR DAMP BMPs. The Permittees will initiate this update in January 2001.

The first step in the BMP re-assessment will be the development of criteria for BMP evaluation. Initial BMP evaluation criteria may include:

- Effectiveness in controlling pollutants associated with stormwater
- Cost effectiveness, including, where applicable, the cost of land, capital improvements and maintenance
- Other environmental considerations (vectors, odors, noise, etc.)
- Public acceptance

The BMP assessments will be conducted by Work Groups that will be established for the following program elements:

- Illicit Connection/Illegal Discharge
- Development Planning
- Construction Activities
- Existing Commercial and Industrial Facilities
- Municipal Facilities and Activities

- Enforcement Activities and Protocols

The establishment and composition of such Work Groups is described in Section 4.1.

The BMP assessments will be conducted in three phases. In the first phase, the Permittees will evaluate existing BMPs for each program component. In the second phase, additional BMPs, not currently included in the SAR DAMP will be identified and evaluated. The additional BMPs will be identified through review of other municipal stormwater programs and BMP guidance documents prepared by the California Stormwater Quality Task Force, State Water Resources Control Board, United States Environmental Protection Agency (USEPA), and others. Based on the BMP assessments, each BMP will be categorized as accepted for inclusion in the SAR DAMP, rejected, or deferred pending further study.

The third phase will consist of development of measurable performance goals and reporting requirements for each BMP. Measurable performance goals will be developed for the area-wide BMP programs and for implementation of BMPs by individual Permittees, as appropriate. To the extent feasible, measurable performance goals for individual Permittees will consider the needs and characteristics of the specific Permittee. These measurable performance goals are meant to provide an indication of the extent of program implementation and program effectiveness. Each Permittee will strive to meet their respective measurable performance goals. Examples of possible measurable performance goals include:

- Attendance at a certain number of stormwater program meetings each year
- Conducting/attending a certain number of municipal employee training classes each year
- Conducting annual self-inspections of municipal facilities (e.g., maintenance yards)
- Presentation of stormwater awareness programs at (number) schools within the region
- Drive-by surveillance inspections of 90% of the storm drain facilities within the Permittee's jurisdiction to identify illegal/illicit discharges
- Conducting street-sweeping operations or storm drain inlet cleaning a certain number of times each year
- Responding to 90% of all documented non-stormwater discharge reports
- Develop incident reporting and tracking procedures by a given date
- Establish uniform enforcement protocols by a given date
- Codify post-construction BMP requirements for new development and significant redevelopment by a given date



**4.2.6 Monitoring Program**

The Monitoring Program currently being implemented was developed in 1994 and has not been revised subsequently. The Permittees believe that the Monitoring Program should be revised to reduce the focus on general characterization of stormwater runoff from land uses. Rather, the Monitoring Program should more clearly focus on collecting data to better understand the causes of current impairments of water bodies that may be caused by discharges from municipal stormwater drainage systems. The Monitoring Program should also be revised to support the collection of data necessary to develop scientifically defensible TMDLs. In revising the Monitoring Program, the Permittees will consider the integration of physical, chemical, and biological measures to provide a more cost-effective and scientifically defensible approach to evaluating storm water effects on beneficial uses. Future monitoring efforts will take into account the inherent variability in stormwater and will be designed to support the use of statistical analysis.

***TMDLs***

The most pressing monitoring data needs for the Permittees relate to the Total Maximum Daily Loads (TMDLs) that will be developed within the next several years by the Santa Ana Regional Board under the requirements of Clean Water Act (CWA) Section 303(d). Table 4 summarizes the schedule for developing TMDLs applicable to surface water bodies in the Santa Ana River basin<sup>9</sup>. The Monitoring Program will be revised to better support data collection efforts relevant to establishment of TMDLs for these impaired water bodies. The Permittees and other stakeholders are also participating as members of a TMDL Workgroup and a TMDL Monitoring Subcommittee working with the Santa Ana Regional Board to develop the TMDLs.

***Quality Assurance/Quality Control (QA/QC)***

A Quality Assurance Plan is included as a component of the Consolidated Program for Water Quality Monitoring. This Quality Assurance Plan will be revised to strengthen both field QA/QC and laboratory QA/QC procedures. Specifically, a field manual developed to provide step-by-step guidance for the collection of grab samples will be revised to address field QA/QC components such as field blanks and field duplicates. Laboratory QA/QC will be revised to include the specific USEPA analytical methods, reporting limits, and data quality objectives required of the analytical laboratory.

<sup>9</sup> 1998 California 303(d) List and TMDL Priority Schedule, State Water Resources Control Board.

## SECTION FOUR

## Proposed Activities for 2001 Permit Term

TABLE 4. Schedule for Development of TMDLs

Surface Water Body	Pollutant or Stressor	Source	Priority	Estimated Date of TMDL Completion
Chino Creek, Reach 1	Nutrients	Agriculture, Dairies	Medium	January 2005
	Pathogens ( <i>Coliform</i> )	Dairies, Stormwater & Urban Runoff	Medium	January 2005
Chino Creek, Reach 2	High Coliform Count	Unknown Nonpoint Source	Low	January 2011
Mil Creek (Prado Area)	Nutrients	Agriculture, Dairies	Medium	January 2005
	Pathogens ( <i>Coliform</i> )	Dairies	Medium	January 2005
	Suspended Solids	Dairies	Medium	January 2005
Prado Lakes	Nutrients	Nonpoint Source	Low	January 2011
	Pathogens ( <i>Coliform</i> )	Nonpoint Source	Low	January 2011
Canyon Lake	Nutrients	Nonpoint Source	Medium	January 2004
	Pathogens	Nonpoint Source	Medium	January 2004
Lake Elsinore	Nutrients	Unknown Nonpoint Source	Medium	January 2004
	Organic Enrichment; Low Dissolved Oxygen	Unknown Nonpoint Source	Medium	January 2004
	Sedimentation; Siltation	Stormwater & Urban Runoff	Medium	January 2004
	Unknown Toxicity	Unknown Nonpoint Source	Medium	January 2004
Santa Ana River, Reach 3	Nutrients	Dairies	Medium	January 2011
	Pathogens ( <i>High Coliform</i> )	Dairies	Medium	January 2011
	Salinity; Total Dissolved Solids; Chlorides	Dairies	Medium	January 2011
Santa Ana River, Reach 4	Pathogens	Nonpoint Source	Low	January 2011

### Southern California Cooperative Stormwater Research/Monitoring Program

The RCFC&WCD in its role as Principal Permittee is entering into an agreement to support the formation of the Southern California Cooperative Stormwater Research/Monitoring Program (Cooperative Monitoring Program). The key focus of this Cooperative Monitoring Program is to develop improved methodologies and assessment tools to more effectively understand urban stormwater and non-stormwater impacts to receiving waters. The initial task to be undertaken is to develop a prioritized research agenda. A copy of the agreement and the scope of work for the initial task funded by this Cooperative Monitoring Program are included in Appendix D.

#### 4.2.7 Coordination with Other Programs

The SAR DAMP's coordination objectives include leveraging existing monitoring resources to achieve more effective water quality management monitoring programs. In developing a revised SAR DAMP, regional watershed assessment and water quality control programs that are now



underway in the Santa Ana River drainage area should be identified and assessed. The SAR DAMP should identify any relevant linkages between the municipal stormwater management program and these regulatory and watershed management initiatives, including BMP programs, pilot studies, and monitoring programs. In implementing the SAR DAMP during the term of the 2001 Permit, the Permittees will seek to coordinate monitoring program activities with Phase II entities, CWC Section 13267 studies, TMDL programs, other municipal stormwater programs, and applicable legislative and regulatory initiatives.

### ***Phase II Stormwater Program***

Regulations implementing Phase II of the federal stormwater program have been finalized. In the Santa Ana Region, these requirements will expand formal stormwater program regulatory requirements to:

- Hospitals
- Colleges and universities
- Federal facilities (including Department of Defense facilities)
- Construction activities disturbing an area 1 acre or larger
- Additional industrial and commercial activities

In addition, it is expected that certain requirements of the Phase II program will be extended to Phase I municipal stormwater programs, including the Santa Ana Region Permittees. Where applicable, the SAR DAMP will incorporate these requirements and provide for revision of affected program elements.

### ***CWC Section 13267 Studies***

Recently the Santa Ana Regional Board issued a request for a CWC Section 13267 technical report from certain municipal stormwater permittees in San Bernardino County and Riverside County. The objective of the CWC Section 13267 technical report is the investigation of bacteriological water quality impairments in the Upper Santa Ana River. The San Bernardino and Riverside municipal stormwater permittees have responded by requesting additional time to review existing water quality data and seek clarification regarding the objectives and scope of the requested studies. In addition, other parties, including wastewater dischargers, agricultural operators, the Santa Ana Watershed Project Authority (SAWPA), Army Corps of Engineers, California Department of Transportation, operators of state and federal institutions and others may need to be included in these studies. Ultimately, it is anticipated that a coordinated water quality control program will need to be developed in coordination with these other parties. BMP

programs related to the municipal stormwater discharges would be incorporated into the SAR DAMP.

### ***TMDL Development and Implementation***

As required by Section 303(d) of the Clean Water Act, the State and USEPA have initiated the development of TMDLs for waters of the State not meeting water quality objectives. The Santa Ana Regional Board is currently in the process of developing nutrient and sediment TMDLs for Lake Elsinore and Canyon Lake. The implementation plans associated with these TMDLs will directly affect municipal stormwater dischargers and other dischargers in the land areas tributary to these receiving waters. The update of the SAR DAMP will need to complement the Santa Ana Regional Board TMDL implementation plans and the activities of entities such as SAWPA and the Lake Elsinore Joint Powers Authority.

### ***Other MS4 Stormwater Programs***

Potential economies of scale and enhanced program effectiveness may be realized through coordination of stormwater management programs with other MS4 stormwater management programs. Within the permitted area, this may include coordination with Caltrans and Phase II permittees. Further coordination with the other countywide stormwater management programs in Southern California may also provide benefits. The objective of this coordination may include sharing of data, increased consistency through standardization of programs and methods consistent with local differences. For example, separately permitted MS4 stormwater programs are being implemented in the Santa Margarita and Whitewater River watersheds of Riverside County. The Santa Ana Regional Board sought to promote consistency within the Santa Ana River basin by issuing similar MS4 stormwater permits in 1990 and 1996 to the San Bernardino and Riverside County permittees. The public education program implemented by the Permittees has been coordinated with the public education programs in Los Angeles and San Bernardino Counties. Additional opportunities for coordination include requirements for new development planning and stormwater management requirements for industrial and commercial facilities.

### ***Legislative and Regulatory Initiatives***

Improving the protection of surface water quality has proven to be an issue of growing interest and activity in both the legislative and regulatory arenas. It is anticipated that this activity will continue throughout the term of the 2001 Permit. Monitoring and responding to these legislative and regulatory initiatives will continue to be an important function of the Management Steering and Technical Committees.

#### **4.2.8 2001 Permit Requirements**

The 2001 Permit may include revised program requirements, including compliance programs and activities, data collection and reporting procedures, etc. The SAR DAMP will incorporate any such requirements in the context of the ongoing stormwater management program.

#### **4.2.9 SAR DAMP Format and Structure**

The SAR DAMP was organized based on the "Early" Permit requirements. However, it no longer provides a well-organized structure that includes all elements of the current stormwater management program. For example, the current SAR DAMP does not address several key program elements such as the Illicit Connection and Illegal Discharge Elimination Program and the Monitoring Program because these programs were developed and implemented separately from the SAR DAMP. Another key element of the stormwater program, the Plan for Public Education and Participation, is included as an appendix to the SAR DAMP, and Supplement A (New Development BMPs) is a separate document altogether. Thus, the current SAR DAMP is not all-inclusive, and should be modified to reflect the extent and importance of all current stormwater management program elements. The modification and update of the SAR DAMP will be initiated early in the term of the 2001 Permit to improve stormwater management program understanding and implementation.

Within the current SAR DAMP BMP descriptions are located in essentially two sections – Section 3.0, Plan for Existing Residential and Commercial/Industrial Areas, and Section 4.0, Plan for Construction Sites and New Development. Within these two sections, four types of BMPs are identified. These include:

- Regulatory and Enforcement Activities;
- Solid Waste Activities;
- Road and Drainage System Operation and Maintenance Activities; and
- Environmental Education Activities.

A discussion of structural controls is included in a separate section altogether, (Section 7.0) and new development BMPs are included in a separate volume (Supplement A). Because the BMPs are scattered throughout these sections and in supplemental documents, it can be difficult for the Permittees to locate relevant information. Also, because the BMPs are not organized in the document by program component, it is more difficult for the Permittees to organize them for implementation by various city departments and staff. Thus, the BMPs in the SAR DAMP should be reorganized in a more convenient and easy-to-access format.

In the development of the ROWD, several local stormwater management programs were reviewed for reference purposes. These stormwater management program documents included:

- Orange County Drainage Area Management Plan, dated December 30, 1994;
- Ventura County Stormwater Management Plan: Application for Reissuance of Waste Discharge Requirements and NPDES Permit, dated February 1999;
- Los Angeles County Comprehensive Stormwater Quality Management Program: Volume I Implementation Manual, dated May 1999; and
- San Bernardino County Draft Report of Waste Discharge Application dated March 24, 2000.

In general, these reports have similar organizational structures. These documents begin with a program management overview containing descriptive information about the program management structure, overview of permit requirements, legal authority, program funding, institutional arrangements, etc. The program management overview is usually followed by separate sections addressing different source areas or source activities such as industrial/commercial sources, residential sources, public facilities, public agency activities, construction, new development; illicit connection/illegal discharges. Applicable BMPs for the potential pollutant sources are also identified. Descriptions of the other program elements follow including the public education/participation program, monitoring program and annual reporting/evaluation program.

Based upon review of these stormwater management program documents, a suggested outline for a revised SAR DAMP is:

- I. Executive Summary
- II. Introduction and Background
  - A. Regulatory Framework
  - B. Drainage Area Description
  - C. Land Use and Population Characteristics
  - D. Current Water Quality Concerns and Issues
    1. TMDLs and schedules
    2. Identified Pollutants of Concern (bacteria, nutrients, sediment, etc.)
    3. Regional watershed programs
- III. Program Management
  - A. Priorities of Area-wide Program
  - B. Institutional Arrangements
    1. Management Steering Committee
    2. Technical/Advisory Committees
    3. Interagency/Implementation Agreements



- C. Funding Sources
- D. Legal Authority
- E. Training
- IV. Illicit Connections and Illegal Discharges Elimination
- V. Municipal Facilities and Activities
- VI. Construction Sites
- VII. Development Planning
- VIII. Industrial and Commercial Sources
- IX. Public Education and Outreach
- X. Monitoring Program
- XI. Program Evaluation
  - A. Internal Reporting
  - B. Annual Reporting
  - C. SAR DAMP Revisions (a process for revision in response to evaluation)

The BMPs should be organized by source area or source activity within the body of the document. However, for easy reference, a BMP index will be included as an appendix based on BMP category (e.g., Development Planning, Residential, Construction Sites, Municipal Facilities and Activities). As the program elements may continue to evolve during the term of the 2001 Permit, a mechanism for incorporating revisions to the SAR DAMP will be included.

To help make the document user-friendly, especially for new Permittee staff, a glossary of relevant stormwater science, regulatory, and management terms will be included as an appendix.

#### **4.2.10 Process for SAR DAMP Revision**

In the first step of the SAR DAMP update, the Permittee Technical Committee will review the objectives, schedule and outline described in this ROWD. The purpose of this review will be to determine if any revisions are needed in consideration of other water quality program requirements that may have developed subsequent to the submittal of this ROWD. Based on this review, the Technical Committee will establish the objectives, schedule and outline that will guide revision of the SAR DAMP.

The second step in the revision of the SAR DAMP will be the identification of Work Groups for each of the program components by the Technical Committee. An objective in selection of Work Group members will be to seek a range of perspectives and interests to facilitate the development of effective and implementable program components. The Work Groups will include Permittee representatives, industry representatives, Regional Board staff, the general public, and all other stakeholders as appropriate. A Permittee representative will chair each Work Group.



Each Work Group will guide the development of the assigned component of the SAR DAMP consistent with the objectives, schedule and outline adopted by the Technical Committee. In developing each program component, the Work Groups will also identify any training needed to facilitate effective implementation. An initial draft and a revised draft of the assigned element will be submitted for review and comment by the Technical Committee. The Work Groups will then prepare the Final Draft program components.

The Technical Committee will finalize the program components in the preparation of the Draft SAR DAMP. The Draft SAR DAMP will then be submitted for review and approval by the Management Committee. The Technical Committee will then submit a Final SAR DAMP for approval by the Management Committee. Following approval by the Management Committee, the Principal Permittee will forward the Final SAR DAMP to the Santa Ana Regional Board for approval. Upon approved of the Final SAR DAMP by the Santa Ana Regional Board, each Permittee will be required to obtain formal approval by resolution by the respective city councils or Board of Supervisors.

#### **4.2.11 Schedule for SAR DAMP Revision**

The revision of the SAR DAMP is expected to take a minimum of 18 months and will be initiated following the submittal of the 1999/2000 Annual Program Report. The revised SAR DAMP will be submitted to the Executive Officer of the Santa Ana Regional Board for review and approval. Following approval of the SAR DAMP by the Regional Board, the Permittees will then require approximately 4 months to formally adopt the SAR DAMP for their respective jurisdictions.

### **4.3 SAR DAMP TRAINING PROGRAM**

Based on Permittee comments about the SAR DAMP and the NPDES municipal stormwater permit program in general, a training program/workshop for the SAR DAMP and municipal stormwater program implementation will be developed and held annually. This training will be developed for the key Permittee staff, including planning and development review staff, operations and maintenance personnel, as well as city managers and other city officials, as appropriate. Such training may help Permittees with permit compliance, enforcement, resource allocation, annual reporting requirements, and generally improve overall understanding and implementation of the Santa Ana Permittees municipal stormwater management program.

In revising the SAR DAMP, the area-wide stormwater training component will be updated. This update will focus on two primary components:

- Conducting focused program component training for Permittee staff; and
- Conducting general program outreach to managers, elected officials and other decision makers.

As part of updating each program component of the SAR DAMP, the Work Groups will identify the training needed to promote effective implementation of each of the stormwater program components. Training that has been conducted by other municipal stormwater permittees and USEPA guidance documents will be reviewed in developing the training recommendations. The training recommendations will consider:

- Target audience(s)
- Related or parallel Permittee training programs
- Frequency of training
- Informational brochures
- Cost
- Sources of training materials and instructors

The Technical Committee will compile the recommended program component training in the development of the overall regional stormwater training program. In some instances, opportunities for consolidation of related training programs might be identified. Opportunities for coordination with other municipal stormwater programs, including Caltrans, will be identified and considered for use. This coordination may occur directly with the other municipal stormwater dischargers, through APWA and other professional organizations, the California Stormwater Quality Task Force or other appropriate forums. This information will be summarized in the development of a prioritized program for area-wide stormwater training.

A program to provide outreach about stormwater regulatory developments and related water quality issues (e.g., TMDLs) to agency decision makers (e.g., city council, city managers, Board of Supervisors) will be developed and conducted. This form of outreach is intended to promote better organizational understanding of the stormwater program requirements, to generate greater commitment to full compliance with stormwater program requirements, and to promote allocation of adequate resources for effective implementation of the SAR DAMP. In developing the program components, the Work Groups will identify information related to their program elements that should be communicated in a quarterly update to the managers, elected officials

and other decision makers in the region. This information will be summarized and consolidated by the Technical Committee in developing the regional management update program.

#### **4.4 PROGRAM FOR PILOT PROJECTS**

At this time the Permittees have not identified any specific pilot projects. However, as work progresses on the Lake Elsinore and Canyon Lake TMDLs for nutrients, pathogens, and toxics, pilot projects may be identified. It is also likely that a pilot study (or studies) will be one of the recommendations resulting from the CWC Section 13267 technical report regarding bacteriological water quality impairments in the Upper Santa Ana River. Also, as SAWPA and others move forward with watershed initiatives, opportunities to participate in pilot projects may be identified.

#### **4.5 STAKEHOLDER PROCESS FOR DEVELOPMENT OF POST-CONSTRUCTION STORMWATER CONTROLS**

In 1995 the Permittees completed development of a suite of BMPs to address runoff from new development and redevelopment. Beginning in 1996, the Permittees were required to incorporate post-construction stormwater runoff controls as provided in the "New Development Guidelines," Supplement A to the Drainage Area Management Plan (DAMP), and its attachment, "Selection and Design of Stormwater Quality Controls." The "New Development Guidelines" require new development (or significant redevelopment) to include appropriate non-structural BMPs and appropriate "routine" structural BMPs<sup>10</sup> into development plans prior to the issuance of building/grading permits or prior to map recordation, as applicable. Additionally, where specific water quality impairments exist and may be affected by development, "special" structural BMPs<sup>11</sup> should be required. The "New Development Guidelines" also specify that this framework is required of public agency capital projects irrespective of whether the local jurisdiction issues formal permits for itself or its contractors.

##### **4.5.1 BMP Review**

Since the development of Supplement A in 1996, the Permittees and others (e.g., Caltrans, ASCE) have gained experience in implementing both source control (pollution prevention) and treatment control BMPs. In addition, studies evaluating the pollutant removal effectiveness,

<sup>10</sup> "Routine" structural BMPs are economical, practicable, small-scale measures that can be feasibly applied to the smallest unit of development.

maintenance, vector control issues and other factors related to BMPs have been conducted by various entities. The non-structural BMPs and "routine" structural BMPs identified in Supplement A will be reviewed in light of more recently developed information. Based on this review, the BMPs identified in Supplement A may be revised or removed and additional BMPs may be added.

#### **4.5.2 Stakeholder Process for Treatment Control BMPs**

Earlier this year the Los Angeles Regional Board imposed specific numeric design criteria for stormwater BMPs and established treatment control requirements for broad categories of new development and redevelopment upon the Los Angeles County Permittees. Similarly, the San Diego Regional Board has proposed the inclusion of similar new development requirements for municipal stormwater permittees in San Diego County. Municipal stormwater dischargers in the San Francisco Bay area and the Sacramento/Fresno area have also made initial steps toward establishing more definitive requirements for incorporating post-construction stormwater quality considerations into the development planning and approval process. Further, as part of its statewide stormwater program, Caltrans is developing design criteria for treatment control BMPs to manage stormwater runoff from its highway and maintenance facilities. USEPA Region IX has endorsed inclusion of numeric design criteria in MS4 NPDES permits. Further, the USEPA is scheduled to publish a proposed rule (entitled "Effluent Guidelines for Construction and Development Industry") in December 2000. These Effluent Guidelines will establish minimum design and maintenance criteria for a variety construction and post construction BMPs. This rule is scheduled for adoption in February 2002.

In light of this increased focus on treatment BMPs, the SAR DAMP program component for new development and redevelopment should be revised using a defensible stakeholder-driven process to prepare appropriate design criteria for post-construction stormwater BMPs. A stakeholder-driven process would help ensure the development of design criteria appropriate for the Santa Ana Region. As part of the revision of the post-construction stormwater controls component of the SAR DAMP, the Permittees will review current post-construction stormwater treatment BMPs and consider development of uniform design criteria, where appropriate. The objective for these design criteria will be the protection of receiving water quality, riparian corridors, wetlands, and other natural resources from potential impacts of stormwater discharges from

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<sup>11</sup> "Special" structural BMPs are engineered facilities designed to address specific water quality problems identified in the watershed.



newly developed areas or from areas being redeveloped. Treatment control BMPs may include regional facilities, project-specific BMPs or combinations of these BMPs.

The first step in the process of developing design criteria for treatment control BMPs will be the establishment of a broad-based Stakeholder Advisory Team. The development of design criteria will affect a wide range of projects throughout the Santa Ana Region. Further, implementation of such criteria will likely require the revision of existing ordinances or drafting of new ordinances, the revision of Permittee building codes, planning and development review procedures, construction site inspection procedures, and long-term maintenance provisions. Therefore, involvement of affected stakeholders will be critical to the development of practicable design criteria that are appropriate for the Santa Ana Region.

To promote broad participation in this process, representation from the following groups will be sought for the Stakeholder Advisory Team:

- Permittees
  - Engineers
  - Building officials
  - Planners
- Special districts
- Utilities
- Building Industry Association
- Other industry and trade associations (e.g., Western States Petroleum Association, restaurant associations)
- Environmental advocates
- Local Resource Conservation District

Where appropriate, design criteria will be developed for post-construction stormwater treatment BMPs through the revision of the Development Planning component of the SAR DAMP. The criteria that will be developed will be the identification of the appropriate design storm and/or runoff volume to be used in sizing the treatment BMPs. However, these design criteria may vary within the Santa Ana Region (e.g., on a sub-watershed basis).



Another issue to be addressed by the Stakeholder Advisory Team is the identification of the categories of development/redevelopment projects for which treatment control BMPs will be required. For example, the following concepts will need to be reviewed and defined:

- Minimum project size
- Definition of "redevelopment"
- Residential
- Commercial
- Industrial
- Public facility requirements
- Definition of "hillside" development
- "Grandfathering" of approved development projects

Since the first Riverside County area-wide NPDES municipal stormwater Permit was issued in July 1990, the Permittees have sought to develop and implement a reasonable and responsive municipal stormwater management program in cooperation with the Santa Ana Regional Board. During this period the expectations and regulatory requirements for municipal stormwater management programs have expanded in breadth and detail as the "state-of-the-art" of stormwater management has evolved. Recent developments pertaining to watershed management initiatives, TMDLs, Proposition 13 (grant funding for water quality projects) and other surface water quality management issues pose significant challenges and opportunities which must be reconciled and integrated with the Permittees' municipal stormwater management program. With the submittal of this ROWD, and continuing through the subsequent drafting, adoption, and implementation of the new 2001 Permit, the RCFC&WCD and its Co-Permittees are committed to continuing the development and implementation of an area-wide municipal stormwater management program that meets the requirements of the federal stormwater regulations and protects the beneficial uses of the region's surface waters. We look forward to working cooperatively with the Santa Ana Regional Board and staff in the continued development of the area-wide stormwater management program.